2-PHASE DC MOTOR DRIVE IC

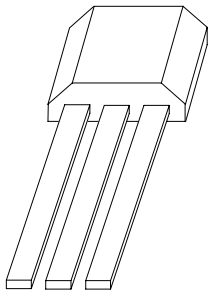
GENERAL DESCRIPTION

The FS40 is an integrated Hall effect latched sensor designed for electronic commutation of brush-less DC motor applications. The device includes an on-chip Hall voltage generator for magnetic sensing, a comparator that amplifies the Hall voltage, and a Schmitt trigger to provide switching hysteresis for noise rejection, and open-collector output. An internal bandgap regulator is used to provide temperature compensated supply voltage for internal circuits and allows a wide operating supply range.

A north pole of sufficient strength will turn the output ON. In the absence of a magnetic field, the output is OFF.

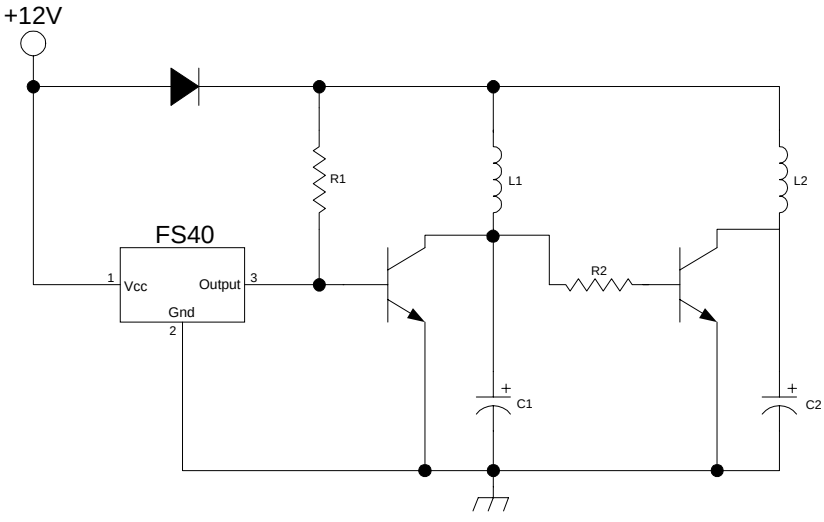
FEATURES

- Wide operating voltage range: 3.0V~20V
- Maximum output sink current 50mA
- Package : TO-92SP-3



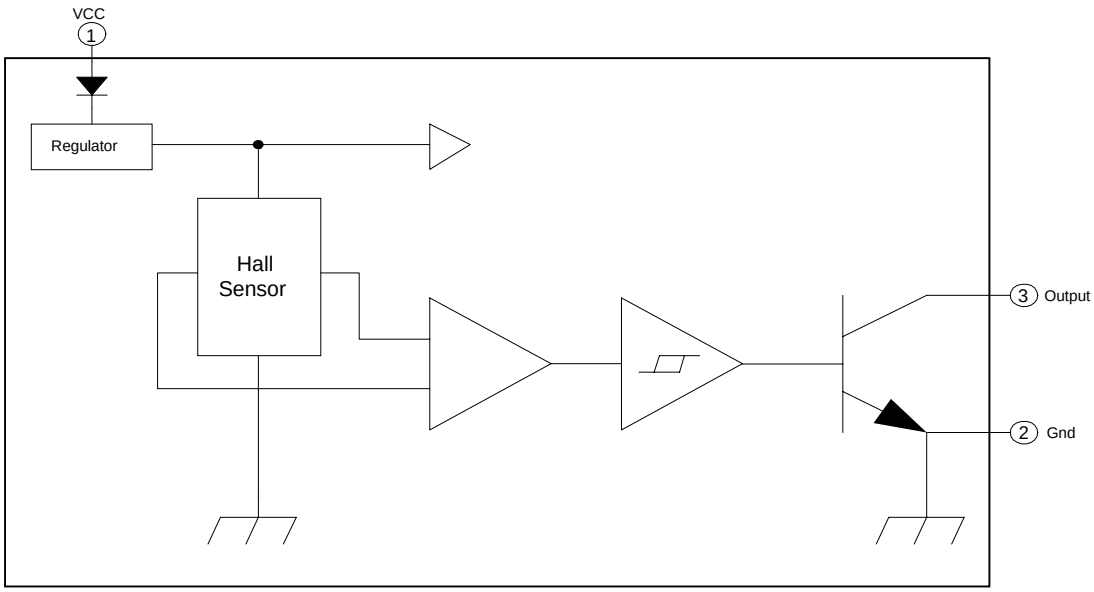
TO-92SP-3

TYPICAL APPLICATION CIRCUIT

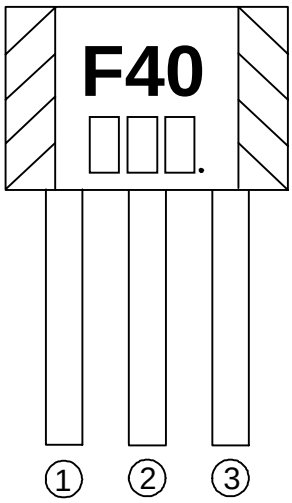


Brushless DC Fan

FUNCTIONAL BLOCK DIAGRAM



MARK VIEW



PIN DESCRIPTION

NAME	NO.	STATUS	DESCRIPTION
VCC	1	P	IC Power Supply
GND	2	P	IC Ground
Output	3	O	It is low state during the N magnetic field.

ABSOLUTE MAXIMUM RATINGS

VCC Pin Voltage ---------- 20V

Output OFF Voltage, Vce ---------- 30V

Output ON Current (Io)

Continuous Current ---------- 50mA

Power Dissipation

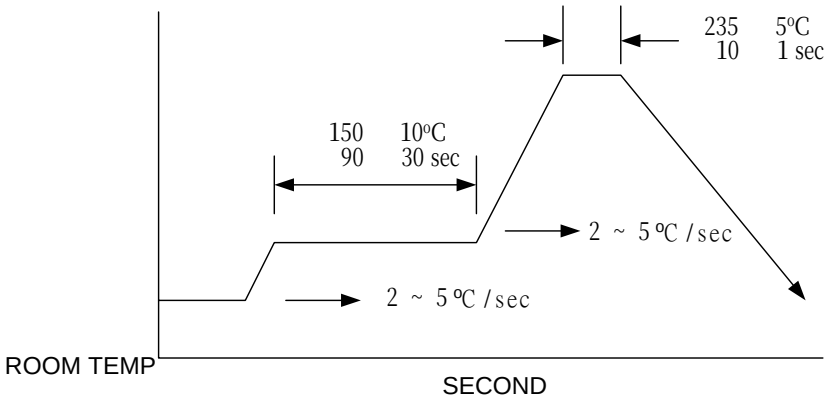
Ta=25℃ ---------- 400mW

Operating Temperature Range ---------- -20 °C +125 °C

Storage Temperature Range ---------- -65 °C +150 °C

Junction Temperature ---------- +150 °C

Lead Temperature (Soldering, 10 sec) ---------- +230 °C



Soldering Condition

DC ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Minimum Operating Voltage	V_{CC}	No use pin is open (Fig1)		3.0		V
Maximum Operating Voltage	V_{CC}	No use pin is open (Fig1)		20.0		V
Quiescent Supply current	I_{CC}	No use pin is open V_{cc} : 3.0V 20V (Fig1)		3.7	10	mA
Output Saturation Voltage	V_{SAT}	Vcc=12V, Io = 50mA (Fig1)		400	500	mV
Note: Fig1 The IC output state is under N magnetic field.						

Output Saturation Voltage Vs. Output Current(Io) Vcc=12V, Temp.=25°C

Output Current (Io), unit:mA	Saturation Voltage Unit:V	Note
5	0.05	
15	0.13	
25	0.19	
35	0.27	
45	0.35	
50	0.40	

AC ELECTRICAL CHARACTERISTICS

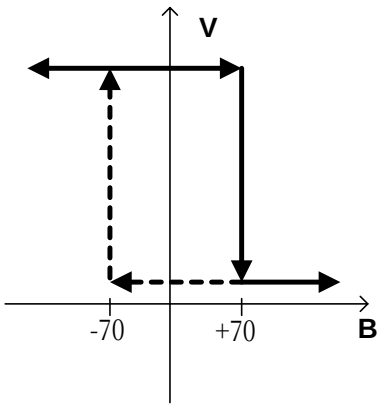
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Rise time	(t_r)	RL=820Ω CL=20pF (Fig1)		0.2		uS
Fall time	(t_f)	RL=820Ω CL=20pF (Fig1)		0.5		uS

MAGNETIC CHARACTERISTICS

FS40LF- A	Ta=-20°C +125°C		
PARAMETER	**MIN**	**MAX**	**UNIT**
Bop		+70	G
Brp	-70		G
Bhys		140	G

FS40LF- B	Ta=-20°C +125°C		
PARAMETER	**MIN**	**MAX**	**UNIT**
Bop		+90	G
Brp	-90		G
Bhys		180	G

FS40LF- C	Ta=-20°C +125°C		
PARAMETER	**MIN**	**MAX**	**UNIT**
Bop		+120	G
Brp	-120		G
Bhys		240	G



OUTPUT PIN

TEST CIRCUITS:

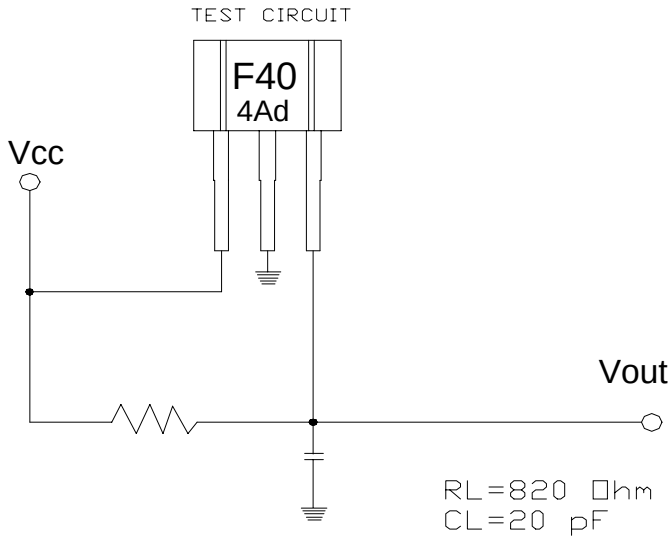
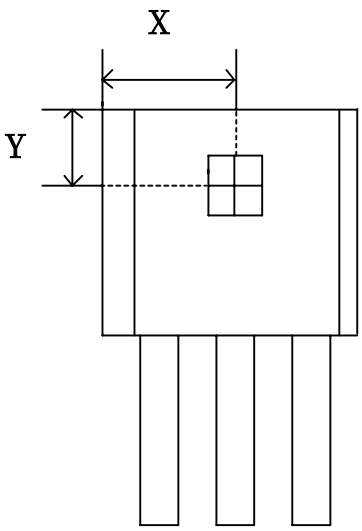


Fig 1

HALL SENSOR LOCATION

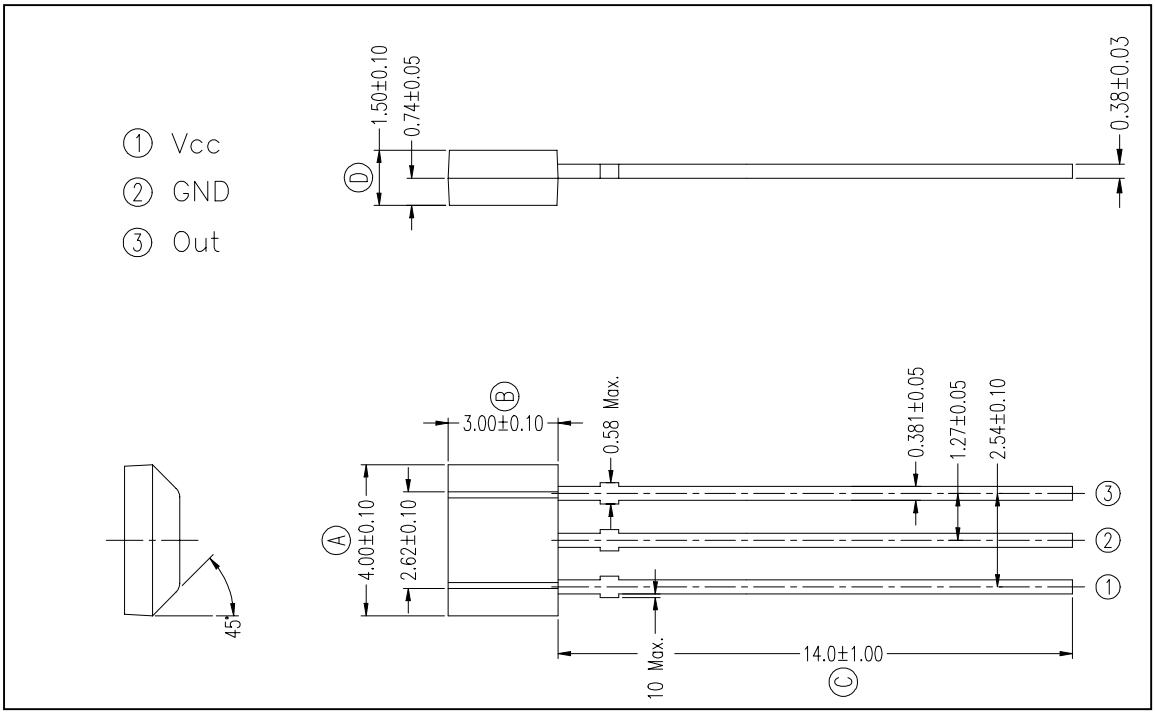
The Fig 2 is the hall sensor location, where marks the IC number.



		UNIT
X	2.1	mm
Y	1.55	mm

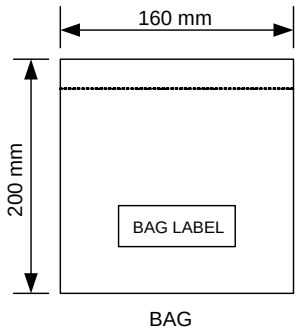
Fig 2 FS40 Hall Sensor Location

PACKAGE OUTLINE (LEAD FREE)

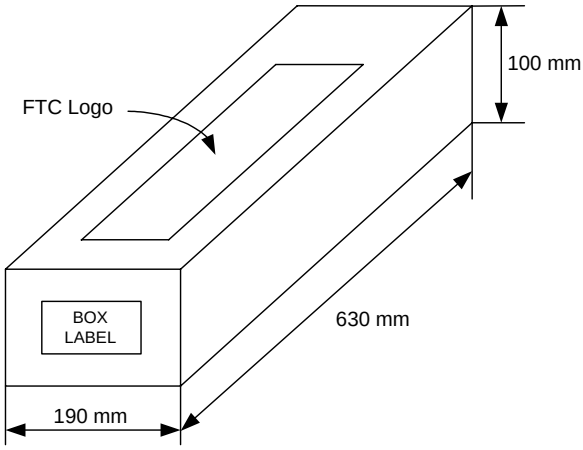


PACKING SPECIFICATIONS

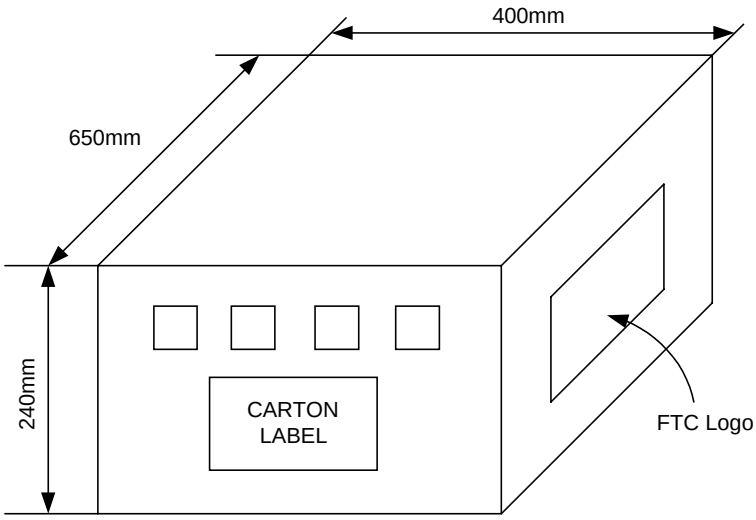
BAG & BOX DIMENSION



BAG



INSIDE BOX



CARTON

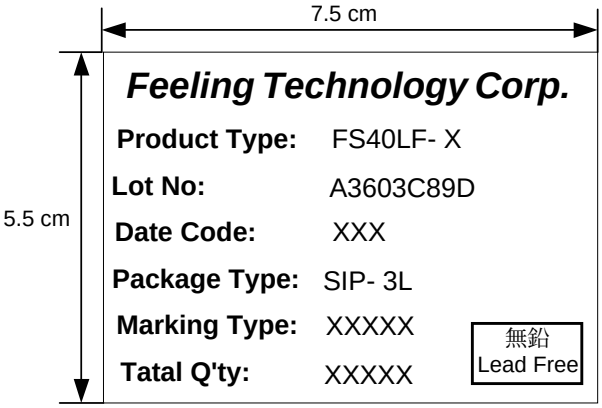
PACKING QUANTITY SPECIFICATIONS

1000 EA / 1 BAG

25 BAGS / 1 INSIDE BOX

4 INSIDE BOXES / 1 CARTON

LABEL SPECIFICATIONS



BAG LABEL, INSIDE BOX & CARTON LABEL

ORDER INFORMATION

Part Number	Operating Temperature	Package	Description
FS40LF- A	-20 °C ~ +125 °C	TO-92SP-3	± 70G (B)
FS40LF- B	-20 °C ~ +125 °C	TO-92SP-3	± 90G (B)
FS40LF- C	-20 °C ~ +125 °C	TO-92SP-3	± 120G (B)